

Naval Postgraduate School
Department of Computer Science
Checklist for MSCS Degree
6203P Subspecialty Code
(Revised: May 2005)

Student Name: _____
Month/Year Enrolled: _____
Projected Graduation Date: _____
CS Track: _____

1. Masters Thesis:

Thesis Credits: _____ (No more than four segments of CS0810)

Title: _____

Advisor(s): _____

Second Reader: _____

2. Core Courses:

All of the following courses must be completed or validated:

- ___MA3025 Logic & Discrete Mathematics (5-1)(Fall/Spr)
- ___CS3000 Great Principles of Computing Technology (4-1)(Fall/Spr)
- ___CS3010 Computer Systems Principles (4-2)(Fall/Spr)
- ___CS3204 Human-Computer Interaction (3-2)(Win/Sum)
- ___CS3310 Artificial Intelligence (4-1)(Win/Sum)
- ___CS3320 Database Systems (3-1)(Fall/Spr)
- ___CS3450 Operating Systems (3-2)(Win/Sum)
- ___SW3460 Software Methodology (3-1)(Win/Sum)
- ___CS3502 Computer Communications & Networks (4-2)(Fall/Spr)
- ___CS3600 Introduction to Computer Security (4-2)(Fall/Win/Spr/Sum)
- ___CS3601 Automata (4-0)(Win/Sum)
- ___CS3650 Algorithms (4-0)(Fall/Spr)
- ___CS4900 Technology & Transformation I (0-2)(Fall/Spr)
- ___CS4901 Technology & Transformation II (0-2)(Win/Sum)
- ___CS4902 Practices of Transformation 0-2)(Fall/Spr)
- ___MV3202 Computer Graphics (3-2)(Win/Sum) – *Waived for Navy URL students*
- ___OS3307 Modeling Practices for Computing (4-1)(Fall/Spr)
- ___CS3113 Introduction to Compiler Writing (3-2)(Fall/Spr)
- ___CS4182 Computer Systems Management (4-0)(Win/Sum)

Complete the following three course sequence:

- ___CS2900 Intro to Objects & Programming (4-2)(Fall/Spr)
- ___CS3901 Intro to Data Structures & Intermediate Programming (4-2)(Win/Sum)
- ___CS3902 Programming Paradigms (4-2)(Fall/Spr)

3. Military Requirements:

All U.S. Navy & Marine Corps

___NW3230 Strategy & Policy (All U.S. Military)(4-2)(Fall/Win/Spr/Sum)

U.S. Navy Unrestricted Line Only

___NW3275 Joint Maritime Operations Part 1 (Fall/Win/Spr/Sum)

___NW3276 Joint Maritime Operations Part 2 (Fall/Win/Spr/Sum)

___NW3285 National Security Decision Making (Fall/Win/Spr/Sum)

Marine Corps & Army

___MN3331 Principles of System Acquisition & Program Management (5-1)

Optionally recommended for Marine Corps students:

___EO4011 Systems Engineering for Acquisition Managers (3-2)

International Military

___IT1500 Informational Program Seminar for International Officers (4-0)

___IT1600 Communication Skills for International Officers (3-0)(if required by International Office)

___IT1700 Academic Writing for International Officers (2-0)(if required by International Office)

4. Track Requirements: *US Navy must complete one of the first three tracks listed below. Other services and International may choose any one of the seven tracks listed below. (Circle the completed track and initial each applicable course and specialization sequence.)*

NETWORK OPERATIONS TRACK:

___CS4550 Computer Networks II (4-0)(Win/Sum)(Prereq CS3502)

___CS4552 Network Design & Programming (3-3)(Fall/Spr)(Prereq CS4550)

___CS4554 Network Modeling & Analysis (4-0)(Win/Sum)(Prereq CS4550)

___CS4556 Business Economics Network Technology (4-0)(Fall/Spr)

Select one of the following Network Operations Track Specialization Sequences:

___ **Network Management** - IS4031 Information Systems Economics (Fall/Spr)(4-0); IS4926 Telecom & Networking Operating Centers (4-0)(Win)(Prereq CS3502); OS3004 Operations Research for Computer Systems Managers (4-1)(Fall/Spr)(Prereq MA2300, OS3101)

___ **Wireless Networking** - CS4130 Wireless Mobile Computing (3-2)(Fall)(Prereq CS3502, CS3971, CS3973); CS 4135 Mobile Devices (3-2) (Fall)(Prereq CS297X); CS4137 Wireless Data Services (3-2)(Sum)(Prereq CS4130 & CS4135)

___ **Multimedia Networking** – CS3202 Introduction to Multimedia Production (3-2)(Win/Sum); MV3250 Introduction to XML(4-0)(Win); MV4474 Virtual Environment Network & Software Architectures (3-2)(Spr)

___ **Network Security** – CS3675 Network Vulnerability Assessment (3-2) (Win/Sum) (Prereq CS3502); CS3690 Network Security (4-2)(Win/Sum)(Prereq CS3600 &

CS3502); CS4138 Mobile & Wireless Security (3-1)(Win) (Prereq CS3600, CS3690 & CS4137)

___ **Performance Analysis** – OS2103 Applied Probability for Systems Technology (4-1)(Fall/Win/Sum) (Prereq MA1117); OS3307 Modeling Practices for Computing (4-1) (Win/Sum); OS3604 Decision & Data Analysis (4-0)(Win/Fall/Spr)(Prereq OS2103)

___ **Network Programming** – CS4112 Distributed Operating Systems (3-2) (Win/Sum) (Prereq CS3450); CS 4452 Programming Parallel Computers (2-4); SI3002 Project Management (3-v)(Fall/Spr)

___ **Information Warfare** – CS3675 Network Vulnerability Assessment(3-2) (Win/Sum); EC3760 Information Operations Systems(3-2)(Win) (Prereq EC2500, EO2512); CS4920(classified) or CS4677 Computer Forensics (3-2) (Fall/Spr)

INFORMATION SECURITY & ASSURANCE TRACK:

___ CS3670 Information Assurance: Secure Management of Systems (3-2)(Fall/Spr) (Prereq CS3600)

___ CS3690 Network Security (4-2)(Win/Sum)(Prereq CS3600 & CS3502)

___ CS4600 Secure Computer Systems (3-2)(Fall/Spr) (Prereq CS3600, CS3450, CS3502)

___ CS4605 Security Policies, Models & Formal Methods (3-1)(Win/Sum) (Prereq MA3025 & CS3600)

Select one of the following Information Security & Assurance Track Specialization Sequences:

___ **Certification and Accreditation** - CS3675 Network Vulnerability Assessment (3-2)(Win/Sum); CS4680 Introduction to Certification & Accreditation (3-0) (Fall/Spr) (Prereq CS3600, CS3670, CS3690); CS4614 Advanced Topics in Computer Security (3-1)(Win/Sum)(Prereq CS3600, CS4600, CS4605); or classified CIP course

___ **Critical Infrastructure Protection** - CS3640 Analysis of DoD Critical Infrastructure Protection (3-1)(Fall/Spr)(Prereq CS3600); CS4603 Database Security (3-1)(Spr)(Prereq CS3600, CS3320, SW3450); CS4614 Advanced Topics in Computer Security (3-1)(Win/Sum) or classified CIP course

___ **Computer Network Operations**- CS3675 Network Vulnerability Assessment (3-2)(Win/Sum); CS4677 Computer Forensics (3-2)(Fall/Spr)(Prereq CS3010, CS3600, CS3670); CS4680 Introduction to Certification & Accreditation (3-0)(Fall/Spr) or Advanced Network Security

___ **Secure Database** - CS4603 Database Security (3-1)(Spr); CS4312 Advanced Database Systems (3-1)(Prereq CS3320); CS4614 Advanced Topics in Computer Security (3-1)Fall/Spr)

___ **Forensics** – CS3675 Network Vulnerability Assessment (3-2); CS4677 Computer Forensics (3-2); CS4614 Advanced Topics in Computer Security (3-1)

___ **Security Foundations** - CS4920 Protocol Analysis; MA 3560 Modern Applied Algebra(4-0) (Prereq MA3025); MA4570 Information Theory & Cryptography (4-0)(Prereq MA3560); CS4614 Advanced Topics in Computer Security (3-1)

___ **Network Warfare** - CS4677 Computer Forensics, Classified Course; CS4614 Advanced Topics in Computer Security (3-1)

___ **Network Security** - CS3675 Network Vulnerability Assessment; CS4920 Protocol Analysis; CS4614 Advanced Network Security or CS4138 Mobile & Wireless Security

SOFTWARE ENGINEERING & ARCHITECTURE TRACK:

- ___ SW4500 Software Engineering (3-1)(Prereq CS3460)
- ___ SW4583 Principles of Software Design (3-1)(Spr)
- ___ SW4591 Requirements Engineering (3-1)
- ___ SW4592 Software Risk Assessment in DoD (3-1)(Sum)

Select one of the following Software Engineering Track Specialization Sequences:

___ **Weapons Systems Software Safety** - SW4540 Software Testing; SW4582 Weapons System Software Safety (Fall); SW4920 Advanced Topics in Systems Software Safety

___ **Software Maintenance & Evolution** – SW4510 Computer Aided Prototyping (Prereq SW4500); SW4560 Software Evolution; SW4570 Software Reuse(Spr) Prereq SW4500)

___ **Software Testing & Quality Assurance** – SW4540 Software Testing; SW4581 Software Reliability (Win) (Prereq SW4500); SW4510 Computer Aided Prototyping

___ **Real-time System Design** – SW4510 Computer Aided Prototyping; SW4580 Design of Embedded Real-time Systems; SW4600 Automata, Formal Spec. & Verification (Fall)

COMPUTER GRAPHICS & VISUAL SIMULATION TRACK:

- ___ MV4470 Image Synthesis (3-2)(Fall/Spr) (Prereq CS3773, MV4202 or instructor's consent)
- ___ MV4002 Simulation & Training (4-1)(Win/Sum)
- ___ MV4471 Computer Animation (3-2)(Win)
- ___ MV3500 Inter-network Communication for Simulation (3-2)(Win/Sum)

Select at least three of the following:

- ___ MV3250 Introduction to XML Programming (4-0)(Fall)
- ___ MV3204 Computer Graphics with X3D/VRML (3-2) (Win/Sum)
- ___ MV4015 Agent-based Autonomous Behavior (4-2)(Win)
- ___ MV4025 Cognitive & Behavioral Models for Simulation (3-2)(Sum)
- ___ MV4472 Advanced Physically-based Modeling (3-2)
- ___ MV4001 Human Factors of Virtual Environments (4-1)(Fall)
- ___ OA3401 Human Factors in System Design (3-1)(Fall/Spr)
- ___ OA3402 Human Performance Measurement (3-0)(Win/Sum)
- ___ OA4401 Human Performance Evaluation (4-0)

DATABASE & KNOWLEDGE ENGINEERING TRACK:

- ___ CS4310 Sensory Artificial Intelligence (4-1)(Win)(Prereq CS3310)
- ___ CS4312 Advance Database Systems (3-1)(Win)
- ___ CS4322 Internet Information Systems Technology (3-2)(Sum)
- ___ MV4015 Multi-agent Systems (3-2)(Win/Sum)

Select at least three of the following:

- ___CS4315 Learning Systems & Data Mining (3-1)
- ___CS4112 Distributed Operating Systems (3-2)
- ___MV4025 Cognitive & Behavior Modeling f/Simulations (3-2)(Sum)(Prereq CS3310)
- ___MV3250 Introduction to XML (4-0)(Fall)
- ___EC4460 Artificial Neural Networks (3-1)(Sum) (Prereq EC3410, EC3500)
- ___EC4480 Image processing & Recognition (3-2)(Win) Prereq EC3400)
- ___OA4108 Data Mining (2-2)(Spr) (Prereq OA3103)

WIRELESS & MOBILE DEVICES:

- ___CS4130 Wireless Mobile Computing (3-2)(Fall)
- ___CS4135 Mobile Devices (3-2)(Spr)(currently taught in fall)
- ___CS4137 Wireless Data Services (3-2)(currently taught in winter)
- ___CS4138 Mobile & Wireless Security (3-1)(Win)

Select at least three of the following:

- ___CS3130 Software Design for Mobile Computers (3-2)
- ___CS4550 Computer Networks (4-0) (Win/Sum)
- ___CS4552 Network Design & Programming (3-3)(Fall/Spr)
- ___CS3502 Data & Computer Communication (4-0)(Fall/Spr)
- ___CS3690 Network Security (4-0)
- ___CS4112 Distributed Operating Systems (3-2)(Win/Sum)(currently taught in fall)
- ___SW4555 Engineering Network Centric Systems (3-1)

AGENTS OF COGNITIVE SYSTEMS TRACK:

- ___MV4015 Multi-agent Systems (3-2)(Win/Sum)
- ___CS4315 Machine Learning & Data Mining (3-2)(Spr)
- ___MV4025 Cognitive & Behavioral Modeling for Simulations (3-2)(Sum)
- ___MV4100 Cognitive Engineering (4-1)(Fall)

Select at least three of the following:

- ___CS4310 Natural Language Processing & Computer Vision (4-1)(Win)
- ___EC4460 Artificial Neural Networks (3-1)(Sum) (Prereq EC3410, EC3500)
- ___ED4480 Image Processing & Recognition (3-2)(Win)(Prereq EC3400)
- ___MV4001 Human Factors of Virtual Environments (4-1)(Fall)
- ___MV4002 Simulation & Training (4-1)
- ___OA3401 Human Factors in System Design (3-1)(Fall/Spr)
- ___OA4401 Human Performance Evaluation (4-0)

5. Credit Hour Requirements:

- ___40 graduate credit hours at or above the 3000 level (CS/MV/SW)
- ___12 of the 40 graduate credit hours must be at the 4000 level (CS/MV/SW)

6. Certification: I certify the information contained on this form is correct.

Name: _____ Date: _____